Periscope.

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ANATOMY.

1. THE STRUCTURE OF THE FIRST OR OUTERMOST LAYER OF THE CEREBRAL CORTEX. W. Bevan Lewis. (Edinburgh Medical Journal, vol i; 1897, p. 573.)

The studies whose results are given, were made on the brains of the rat, mouse, kitten, dog, sheep, ox, pig, the ape, and man. The methods used were the chrome-silver rapid method of Golgi-Cajal the Weigert-Pal, and the author's "fresh method" with aniline blue-black. The "peripheral zone" as the author prefers to call this first layer, decreases in thickness, from the sagittal border of the hemisphere outwards and downwards, and also backwards. It's constituents are:

"First—Neuroglia and lymph connective elements.

"Second—Tangential or superficial medullated belt.

"Third—Terminal dendrites from the apices of pyramidal and other cells.

"Fourth—Termini of the second layer of nerve cells."

Of non-nervous cells, there are recognizable by the "fresh method," two kinds, one small, the other larger, and connected with a blood vessel by a peculiar, sucker-like process. By the silver method there appear several different looking cell forms, all of which however, are probably but different stages of the spider cell. An enormous number of medullated fibres run parallel to the surface, forming a layer whose depth varies in different parts of the cortex. These horizontal fibres are crossed by other fibres, vertical and oblique, making up a thick meshwork. There are also in this belt, numerous fine axis cylinders devoid of sheath.

The nerve cell processes come (1) from the pyramidal cells of the third and fourth layers and (2) from the cells of the second layer. The apical protoplasmic processes pass up towards the periphery, branching continuously so as to form a plumelike structure.

These processes are readily distinguished from the axis cylinders by their peculiar appearance due to the number of short processes they give off. The axis cylinders and collaterals are numerous, cross each other at various angles, and are in close relationship to the protoplasmic processes. Whether they arise mainly from the nerve cells occurring in this layer, is a disputed question. The author thinks that there are too few cells to account for them, and that most of them come from the cells of the deeper layers. As to communication between them and the dendritic processes, he does not attempt to decide whether it is by continuity or by contiguity.

Going on, he describes the cells of the second layer. These present three peculiarities, great variation in contour, a very large nucleus, and a peculiar branching, giving the cell a somewhat horned appearance. There is sudden change in type of cells, in passing from one region to another, and a general suggestion of grouping of special cell forms, in particular regions of the cortex, in very specialized regions, one form occuring to complete exclusion of the others. These cells the author regards as probably sensory elements, and thinks that their varied form may have some connection with the varied qualities of sensation. In conclusion he suggests that the peripheral zone is an enormous field of the cortex, in which the transferance of sensory currents into motor impulses is accomplished. This abstract gives but the briefest outline of this carefully prepared, and well illustrated article.

C. L. ALLEN.

2. LA NEOFORMATION DES CELLULES NERVEUSES DANS LE CERVEAU DU SINGE (New Formation of Nerve Cells in the Brains of Monkeys, Vitzou.) Archives de Physiologie, 9, 1897, p. 29.

An interesting series of experiments upon monkeys, carried on by Vitzou, seems to show that it is possible to reproduce new nervous tissue in the higher animals, although the contrary opinion has been held by many. His subjects were young monkeys. He removed portions of the cortex of the occipital lobes of both sides, thereby rendering the animals quite blind. But in the course of several months they began to regain their sight, and at the end of two years, could see fairly well. It was found upon repeating the operation, that a quantity of new nerve-like material had grown in the former site. It showed upon microscopical examination that nerve cells and nerve fibres were present. But after the second operation no new fibres grew, and the monkeys remained blind. JELLIFFE.

3. ON THE REGENERATION OF PRE-GANGLIONIC AND OF POST-GANGLIONIC VISCERAL NERVE FIBRES. J. N. Langley. Journal of Physiology, 22, 1897, p. 215.

The author has conducted a series of experiments, chiefly upon cats, in which the cervical sympathetics were severed, the vagus being left intact. His general conclusions are as follows: The regeneration of pre-ganglionic fibres takes place by the formation of fresh terminations in connection with nerve cells. In nearly all cases, so far as regards the cervical sympathetic, the different classes of pre-ganglionic fibres form their new endings in connection with nerve cells of their own class and possibly in connection with the same nerve cells with which they were originally connected.

Nevertheless it appears that in certain conditions, pre-ganglionic nerve fibres are able to form endings in connection with nerve cells not belonging to their own class, so that, for example, pupillo-dilator nerve fibres, may become united during regeneration, with nerve cells which send their axones to the erector muscles of the hairs.

And it appears that the post-ganglionic nerve fibres ending in any one tissue can, if an opportunity be afforded them during regeneration, readily form nerve endings in connection with any other visceral tissue, so that for example pilo motor fibres may form nerve endings in the iris, and become pupillo-dilator fibres. JELLIFFE.